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MISSION REPORT / RAPPORT DE MISSION

Lake Turkana National Parks (Kenya)
Parcs nationaux du Lac Turkana (Kenya)

3-7 / 04 / 2015

This mission report should be read in conjunction with Document:
Ce rapport de mission doit être lu conjointement avec le document suivant:

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**Report on the Reactive Monitoring Mission:
Gibe III Dam and Kuraz Sugar Plantation (Ethiopia) for
Lake Turkana National Parks World Heritage Property (Kenya)
From 3 to 7 April 2015**



Photo ©E. Moukala/UNESCO

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May 2015

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Special thanks to Mr. Yonas Desta, Director General of the Authority for Research and Conservation of Cultural Heritage (ARCCH) and his team for his excellent coordination of the mission.

Our gratitude to the Permanent Delegation of Kenya for facilitating the IUCN mission to Kenya, following the mission to Ethiopia.

EXECUTIVE SUMMARY AND LIST OF RECOMMENDATIONS

The World Heritage Centre and IUCN undertook a joint reactive monitoring mission to Ethiopia to assess the potential impact of Gibe III Dam and the Kuraz Sugar Scheme on the Lake Turkana National Parks World Heritage property, as requested by the World Heritage Committee at its 38th session (Decision **38 COM 7B.90**).

The mission to Ethiopia took place from 3 to 7 April 2015, and a meeting with the Kenyan delegation was held in Nairobi on the 15 and 16 May 2015. The mission was tasked to assess the following key issues:

1. Assess the likely impacts of the Gibe III dam on the water level of Lake Turkana and on the OUV of the property;
2. Assess progress achieved with the Strategic Environmental Assessment (SEA) of the Lake Turkana Basin, and review the mitigation measures identified to ensure the maintenance of the OUV of the property during the filling of the dam reservoir and during the operation of the dam;
3. Assess the status and likely impacts of large-scale irrigation projects in the Omo region on the OUV of the property, in particular the Kuraz Sugar Scheme;
4. Discuss any anticipated future projects related to dams and water management;
5. In line with Paragraph 173 of the *Operation Guidelines*, assess any other relevant issues that may negatively impact on the OUV of the property, including its conditions of integrity and protection and management.

The mission

(i) Gibe III hydroelectric project

The Gibe III hydroelectric project (HEP) is the third flow-through hydropower scheme in the Gibe-Omo cascade, and the mission confirmed that 90% of the project was completed at the time of the visit. The impounding of the reservoir started on 19 January 2015 at a constant flow of 60 m³/s and is expected to take three years. Even with the environmental flow releases currently foreseen, the dam is predicted to permanently dampen the magnitude of flood variations significantly from 1.2 m to 0.8 m following completion of the dam. The mission concludes that this will likely constitute a noticeable change to both the riparian and lake ecosystems and the Omo River delta, and may have impacts on fish stocks and wildlife species that depend on the flood plains of the Omo River and the wetlands along the lake's shore, thereby posing a serious threat to the OUV of the property which justifies its inscription under criterion (x).

It should be recalled that the State Party of Ethiopia submitted an EIA for the Gibe III dam, which was reviewed in the 2012 state of conservation report which noted that the EIA did not assess any impacts beyond the Ethiopian territory and did not consider possible impacts on Lake Turkana. Furthermore, the EIA did not consider Gibe III in the context of other related planned or on-going projects.

The impounding of the dam will additionally result in a temporary drop in the lake levels by approximately 2 m. Although this variation is within the historical oscillations of the lake, the foreseen drop in lake level will happen over a short period of time, making it difficult for the ecosystem to adapt and therefore could impact the ecology of the lake. The 2 m lake level drop will also result in a retreat of the lake shore beyond the boundary of the property and hence pose a significant threat to the OUV of the property. It should additionally be recalled that the 2012 mission reported that even on the basis that no water would be extracted from the Omo River downstream of the dam after the filling of the reservoir is complete, it could take a further 12 years for the lake to return to its equilibrium level. Shortly after its meeting with the Kenyan delegation in Nairobi, the

mission was provided with the report of a technical review of the impact of Gibe III on Lake Turkana conducted by the Kenyan Ministry of Environment, Water and Natural Resources, which raised a number of concerns about the potential impacts from the dam on Lake Turkana, and the lack of analysis of those impacts in the EIA of the dam. The mission considers that further detailed analysis to mitigate these threats is required, including a possible extension of the impounding period and slowing down the filling of the reservoir.

(ii) Kuraz Sugar Scheme

The Kuraz Sugar Scheme project was initiated in 2010 by the Ethiopian Sugar Corporation in the Lower Omo Basin, which would involve water extraction from the Omo River to irrigate an area of 111,650 ha. The project has experienced slow development to date, and currently has 6,000 ha of land under sugar cane cultivation (ca. 5% of the total area envisaged). The mission therefore concluded that the Kuraz Sugar Scheme, as currently implemented, has a limited impact on the OUV of the property at present. The State Party of Ethiopia informed the mission that according to its assessment the irrigation scheme as currently foreseen and when completed will lead to a projected 4-6% reduction of the total flow into the Omo River, compared to previous predictions by independent experts of 28-40% of the Omo inflow. The factors taken into this reanalysis included the reduced physical net area for irrigation (from the 170,000 ha previously assumed by independent experts, to a net area of 111,650 ha as explained by the State Party of Ethiopia), higher average rainfall in the region than previously assumed and higher water retention in the topsoil. The mission could not verify this new assessment as it was not provided with the underlying studies and data but emphasises the importance of evaluating the potential impact of the planned, final irrigation area on the OUV of the property in order to fully evaluate the mid-term and long-term impact on the OUV of the property. To achieve this, a detailed EIA should be undertaken, including a specific assessment of impacts from the Scheme and any other proposed development of irrigated agriculture in the Lower Omo Valley on the OUV of the property, using the best available hydrological data of the Lower Omo, including its tributaries downstream of the Scheme, and including an accurate assessment of long-term rainfall data.

(iii) Management

Bilateral discussion between the States Parties of Kenya and Ethiopia on the utilisation of the resources of the Omo River basin was reported by the State Party of Kenya in its 2012 state of conservation report. Further discussion on the potential impact of the Gibe III dam and associated agricultural irrigation projects on the property were initiated in 2013 following the Committee's request at its 37th session, and it is welcomed that the increased dialogue between the two States Parties led to a meeting in January 2015. The mission also noted a joint UNEP project on sustainable development of the Lake Turkana and its river basins was signed by the States Parties in March 2015.

However, the mission noted that in spite of previous commitments made by the States Parties to the Committee, no progress in undertaking a Strategic Environmental Assessment (SEA) had been made, as initially requested by the World Heritage Committee in Decision **36 COM 7B.3** in 2012. Considering the multiple existing developments in Ethiopia and Kenya, as well as further planned projects, including the possibility of Gibe IV and Gibe V, the mission emphasises the need for the States Parties of Kenya and Ethiopia to **urgently** undertake an SEA, to be conducted to the highest international standards and in accordance with IUCN's World Heritage Advice Note on Environmental Assessment, by independent experts, and submit the report to the World Heritage Centre for review by IUCN without delay. The SEA should furthermore identify appropriate measures to ensure that the water level in Lake Turkana, as well as a seasonal variation be maintained, in a way that would be sufficient to minimize impacts on the ecology of Lake Turkana and maintain the OUV of the property.

It was noted in the meeting with the State Party of Kenya, held after the mission's visit to Ethiopia, that some of the 2012 reactive monitoring mission recommendations had been addressed, but that

there were still many outstanding actions, such as conducting a detailed wildlife species census to establish their status and develop a baseline to monitor their recovery. The mission expresses its concern that this absence of baseline data in the face of over-grazing, overfishing and poaching may be negatively impacting on the effectiveness of the protection of the OUV of the property.

Conclusion

The mission concludes that the Kuraz Sugar Scheme as currently developed has a limited impact on the OUV of the property at present, and that the predicted drop in Lake Turkana water level as a result of the Gibe III HEP project will be within the historical oscillations of the lake. However, there are key considerations to be taken, such as the time it will take for the lake to regain its natural equilibrium after the impounding of the Gibe III reservoir, the impacts of permanently dampened flow variations on the ecology of the lake, the full potential impact of the final irrigation area of the Kuraz Sugar Scheme, and any additional developments in the river basin on the OUV of the property. The increased bilateral discussions between the States Parties of Kenya and Ethiopia since 2011 are welcomed and the significant efforts made by the State Party of Ethiopia to mitigate environmental impacts of the Gibe III HEP are acknowledged, nevertheless, there is an urgent need for the two States Parties to jointly undertake an SEA of developments in the Lake Turkana basin, and for the State Party of Ethiopia to undertake a detailed EIA for the Kuraz Sugar Scheme including a specific assessment of impacts from the development of irrigated agriculture in the Lower Omo Valley on the OUV of the property, using best available hydrological data of the Lower Omo reviewed by both Ethiopia and Kenya, including its tributaries downstream of the Scheme, and an accurate assessment of long-term rainfall data, in order to assess and mitigate the potential, significant impacts on the OUV of the property that may arise.

The mission also notes with significant concern that no baseline data is available on wildlife species, whilst wildlife populations continue to be under pressure from over-grazing, overfishing and poaching. The mission emphasises the need for the State Party of Kenya to monitor the status of wildlife populations as recommended in the 2012 mission report.

Considering the ongoing and planned developments in the Omo and Lake Turkana basins, which are additional to the threats from poaching, overgrazing and overfishing in the property reported by the 2012 mission, there is predicted to be a noticeable negative impact on the hydrology and wildlife of the Lake Turkana National Parks World Heritage property. The mission therefore concludes that the criteria for potential danger to the OUV of the property as recognized under criterion (x) are met, in accordance with the Paragraph 180 b) (ii) of the *Operational Guidelines*.

Recommendations

Based on the above findings and conclusions, in order to mitigate the potential for permanent, irreversible damage to the OUV of the Lake Turkana World Heritage property the mission recommends:

1. The States Parties of Kenya and Ethiopia to urgently undertake a joint Strategic Environmental Assessment (SEA), to be conducted to the highest international standards, to assess the cumulative impacts of all developments impacting on the Lake Turkana basin as a matter of priority in consultation with an independent committee of experts from Ethiopia, Kenya and an independent technical organisation (such as UNEP), and submit the completed SEA to the World Heritage Centre for review by IUCN;
2. The State Party of Ethiopia to commit to address the temporary 2 m drop in Lake Turkana's water levels that is predicted to occur during the three year impounding period, in particular by slowing the filling of the reservoir;

3. The States Parties of Kenya and Ethiopia to monitor the water flow and water quality downstream of the Gibe III dam as well as impacts on the seasonal wetlands in the property to ensure sufficient environmental flows are being released into Lake Turkana, and to allow for an accurate assessment of the maximum allowable volume of water extraction for the Kuraz Sugar Scheme;
4. The State Party of Ethiopia to provide a written commitment to the World Heritage Committee to release sufficient environmental flows to maintain sufficient seasonal variation in river flows and water levels needed to sustain the wetlands and floodplains in the Lake Turkana World Heritage property, and to prevent the currently predicted retreat of the lake shore to beyond the boundary of the property;
5. The State Party of Ethiopia to delay the further development of the Kuraz Sugar Scheme until a detailed EIA has been undertaken, including a specific assessment of impacts from the Scheme and any other proposed development of irrigated agriculture in the Lower Omo Valley on the OUV of the property, using best available hydrological data for the Lower Omo reviewed by both Ethiopia and Kenya, including its tributaries downstream of the Kuraz Sugar Scheme and an accurate assessment of long-term rainfall data;
6. The State Party of Kenya to implement all of the 2012 reactive monitoring mission recommendations and provide an update to the World Heritage Centre without delay;
7. The States Parties of Ethiopia and Kenya to develop a transboundary water use agreement and an independent Technical Monitoring Committee within the framework of the UNEP project, "Support to Sustainable Development in Lake Turkana and its River Basins" as suggested by Kenya's Ministry of the Environment, Water and Natural Resources in its "Technical Review on the Impact of Gibe II Dam on Lake Turkana World Heritage Site". This is recommended to be developed within the spirit of the UN Convention on Non-navigational Uses of International Water Courses.

Recommendation as to whether the level of threats to the property warrants the property being placed on or removed of the List of World Heritage in Danger

Considering the likely cumulative impacts from the Gibe III dam on Lake Turkana's water level and natural flow variations, the lack of a thorough assessment of potential impacts from the Kuraz Sugar Scheme, and the fact that both these developments are continuing prior to a comprehensive SEA having been undertaken, the property is in potential danger in accordance with Paragraph 180 of the *Operational Guidelines*, and thus meets the conditions for inscription on the List of World Heritage in Danger. However, under the present circumstances especially regarding the efforts by the State Party of Ethiopia to mitigate environmental impacts from Gibe III, the limited *current* impact from the Kuraz Sugar developments, the fact that developments on the Kenyan side are still in a planning stage, and the cooperation so far shown between Ethiopia and Kenya in terms of commitments to manage the Lake Turkana basin as a whole, the mission team does not at present recommend the inscription of the property on the List of World Heritage in Danger.

ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
BCM	Billion cubic metres
CINP	Central Island National Park
EEP (EEPCO)	Ethiopian Electric Power Corporation
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
ICOMOS	International Council on Monuments and Sites
IGAD	Intergovernmental Authority on Development
IUCN	International Union for Conservation of Nature
KWS	Kenya Wildlife Service
MEWNR	Ministry of Environment, Water and Natural Resources (Kenya)
MOSCA	Ministry of Sports, Culture and Antiquities (Kenya)
NBI	Nile Basin Initiative
NMK	National Museums of Kenya
OUV	Outstanding Universal Value
SEA	Strategic Environmental Assessment
SINP	South Island National Park
SNP	Sibiloi National Park
SOC	State of conservation report (compiled by WHC and IUCN)
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WHC	UNESCO World Heritage Centre

1 BACKGROUND TO THE MISSION

1.1 Inscription history

The Lake Turkana National Parks World Heritage property constitutes of Sibiloi National Park (SNP), Central Island National Park (CINP) and South Island National Park (SINP), covering a total area of 161,485 ha located within the Lake Turkana basin.

The property was inscribed on the World Heritage List in 1997 as Sibiloi/Central Island National Parks on the basis of natural criteria (viii) and (x) for its geology and fossil record from the Pliocene and Holocene periods as well as presence of recent geological process represented by volcanic erosional and sedimentary land forms, its importance in terms of biodiversity, based on its unique and diverse habitats resulting from ecological changes over time inhabited by diverse fauna with a unique desert lake ecosystem, an abundant birdlife and one of Africa's most important breeding areas for the Nile crocodile.

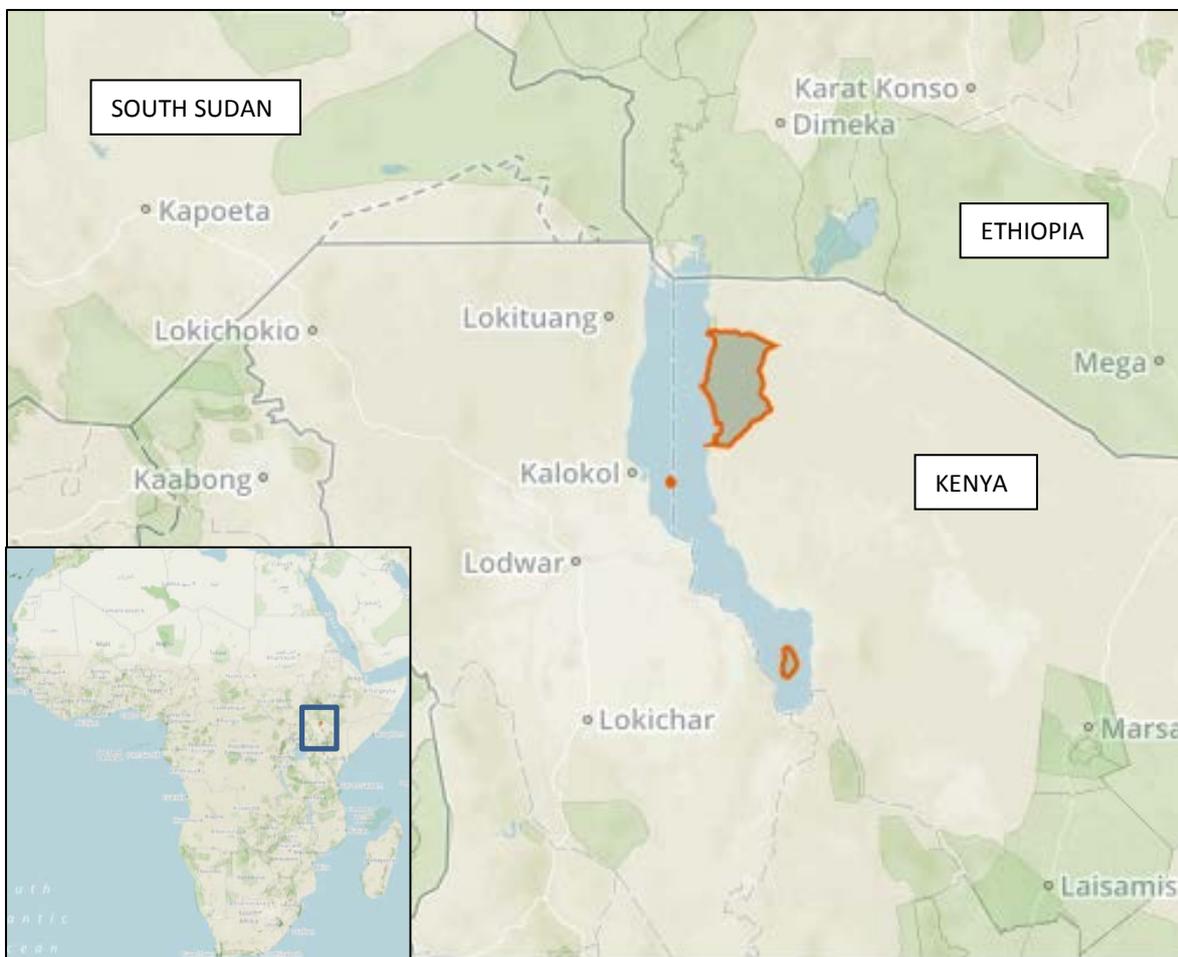


Figure 1. Location of Lake Turkana National Parks World Heritage property, constituting of three National Parks (shown in red): Sibiloi National Park (top), Central Island National Park (middle) and South Island National Park (bottom). ©ProtectedPlanet 2014-2015.

In 2001, the Committee approved an extension of the property, including an additional 3,900 ha of SINP and the renaming of the site to Lake Turkana National Parks. The total size of the site increased from 157,585ha to 161,485ha. Similarly to SNP and CINP, SINP is a breeding ground for crocodile, hippopotamus and a range of venomous snakes and one of Kenya's Important Bird Areas (IBA) as

defined by BirdLife International as a key stopover point for palearctic migrant waterbirds. In the proposed statement of significance it was stated that the Central and South Islands are volcanic islands inhabited by large congregations of the Greater Flamingo and the Nile crocodile (estimated at 14,000). The nomination also notes the importance of the lake in terms of fish biodiversity in the waters surrounding the Park, which support 47 species of fish, 7 of which are endemic to the lake. With the nomination file the State Party also provided a Provisional Integrated Management Plan 2001 – 2005 with the nomination file and the Committee strongly encouraged the Kenyan authorities to complete the management plan for the three parks as an integrated unit.

Lake Turkana was inscribed on the World Heritage List on the basis of the following criteria¹:

- Criterion (viii): The geology and fossil record represents major stages of earth history including records of life represented by hominid discoveries, presence of recent geological process represented by volcanic erosional and sedimentary land forms. This property's main geological features stem from the Pliocene and Holocene periods (4million to 10,000 years old). It has been very valuable in the reconstruction of the paleo-environment of the entire Lake Turkana Basin. The Kobi Fora deposits contain pre-human, mammalian, molluscan and other fossil remains and have contributed more to the understanding of human ancestry and paleo-environment than any other site in the world.
- Criterion (x): The property features diverse habitats resulting from ecological changes over time and ranging from terrestrial and aquatic, desert to grasslands and is inhabited by diverse fauna. In situ conservation within the protected areas includes threatened species particularly the reticulated giraffe, lions and gray zebras and has over 350 recorded species of aquatic and terrestrial birds. The island parks are the breeding habitats of the Nile crocodile, *Crocodylus niloticus*, the *Hippopotamus amphibious* and several snake species. Furthermore, the lake is an important flyway passage and stopover for Palaeartic migrant birds, with the South Island Park also being designated as an important bird area under Birdlife International. The protected area around Lake Turkana provides a large and valuable laboratory for the study of plant and animal communities.

1.2 Examination of the state of conservation by the World Heritage Committee

The state of conservation of the property was examined in 2001 concerning an extension of the site, and then every year since 2011 as follows (see <http://whc.unesco.org/en/list/801/documents/> for the full reports):

Decision 35 COM 7B.3 (UNESCO, 2011)

The Committee expressed its utmost concern for the proposed construction of the Gibe III dam on the Omo River in Ethiopia and its likely significant impact of altering Lake Turkana's fragile hydrological regime and threatening its aquatic species and associated biological systems. The Committee considered that this development may pose an imminent danger to the property's OUV and urged the State Party of Ethiopia to immediately halt all construction of Gibe III dam in line with Article 6 of the Convention, and submit all assessments for this proposal to WHC. The Committee also expressed its concern about the potential cumulative impacts of the proposed Gibe IV and V dams and large scale irrigation plans on the property's OUV, and requested the State Party of Ethiopia to submit assessment for all proposed dams and associated irrigation plan on the Omo River.

The Committee additionally requested the States Parties of Kenya and Ethiopia to invite a joint WHC/IUCN reactive monitoring mission to review the impacts of the Gibe III dam on the OUV of the

¹ <http://whc.unesco.org/en/criteria/>

property, and to provide detailed information on plans for other hydroelectric developments and associated large-scale irrigation projects. Further request was made to the States Parties to report on the course of action taken in response to this decision for examination by the Committee at its 36th session in 2012, with a view to considering, in the case of confirmation of the ascertained or potential danger to OUV in light of the mission's review of the likely impacts of the Gibe III dam on Lake Turkana, the possible inscription of the property on the List of World Heritage in Danger.

Decision **36 COM 7B.3** (Saint-Petersburg, 2012)

The Committee reiterated its utmost concern about the potential and ascertained cumulative impacts of the Gibe III dam and its related irrigation projects on Lake Turkana, as well as the additional planned dams, and urged the State Party of Ethiopia to invite a joint WHC/IUCN mission, as was done by the State Party of Kenya (mission held between 14 and 22 March 2012). The Committee also urged the States Parties to address the issue on a bilateral basis and conduct a Strategic Environmental Assessment (SEA) to assess the cumulative impacts of all developments impacting on the Lake Turkana basin in order to identify appropriate measures to ensure that the water level in Lake Turkana, as well as a level of seasonal variation be maintained, at a level that is sufficient to maintain the OUV of the property.

The Committee also reiterated its request to the State Party of Ethiopia to immediately halt all construction on the Gibe III dam and related irrigation projects until the SEA is completed.

Decision **37 COM 7B.4** (Phnom Penh, 2013)

The Committee regretfully noted that the State Party of Ethiopia had not invited a joint reactive monitoring mission to Ethiopia, and reiterated its request. It was also regretfully noted that the construction of Gibe III and associated projects had continued without an SEA. The Committee reiterated its request to the States Parties to address the issues on a bilateral basis and conduct an SEA.

The Committee additionally requested the State Party of Kenya to implement the recommendations of the 2012 reactive monitoring mission to address the significant impacts of poaching, fishing and livestock grazing on the property.

Decision **38 COM 7B.90** (Doha, 2014)

The initiation of bilateral discussions between the States Parties of Kenya and Ethiopia was welcomed. However, the Committee noted with concern that construction of large scale irrigation schemes had continued, and that the completion and filling of the Gibe III dam was imminent. The State Party of Ethiopia was urged not to start filling the dam and to halt the construction of the large scale irrigation projects until the SEA is completed and appropriate mitigation measures are identified to guarantee sufficient inflow of water to Lake Turkana and sufficient seasonal variations to preserve the OUV of the property.

The Committee decided to re-examine this issue, other planned hydroelectric developments and associated large-scale irrigation projects in the Omo region on the OUV of the property, with a view to considering in the case of ascertained or potential danger to its OUV, the possible inscription of the property on the List of World Heritage in Danger.

The Committee welcomed the invitation by the State Party of Ethiopia for a joint WHC/IUCN reactive monitoring mission. It was following this invitation that the present mission took place, from 3 to 7 April 2015.

1.3 Mission objectives

The mission assessed the likely impacts of the Gibe III dam on the water level of Lake Turkana and on the OUV of the property, the progress achieved with the SEA of the Lake Turkana Basin, and reviewed the mitigation measures identified to ensure the maintenance of the OUV of the property during the filling of the dam reservoir and during the operation of the dam. It also assessed the status and likely impacts of large-scale irrigation projects in the Omo region on the OUV of the property, in particular the Kuraz Sugar Scheme; and it assessed any other relevant issues that may negatively impact on the OUV of the property, including its conditions of integrity and protection and management.

The mission team comprised of Mr Edmond Moukala (UNESCO WHC) and Mr Ele Jan Saaf (IUCN) and Mr Moses Wafula Mapesa (IUCN) and was accompanied by a delegation composed of representatives of the Ministry of Foreign Affairs, the Ministry of Water Irrigation and Energy, the Ministry, the Sugar Corporation, and the Ministry of Culture and Tourism.

At the end of the mission in Ethiopia, the Mission team met with the State Minister of the Ministry of Foreign Affairs, also with respective minister and affiliated agencies of the Ministry of Water, Irrigation and Energy, Sugar Corporation, Ministry of Agriculture, Ministry of Culture and Tourism. Three main meetings were held with various stakeholders, respectively at the ARCCH, Gibe III Dam site, Kuraz Sugar Plantation, and the Ministry of Agriculture. It was agreed that since the Kenyan team had not been invited to Ethiopia to meet the mission, the mission does consult with the Kenyan team in Nairobi. In Nairobi meetings were held with representatives from Ministry of Sports, Culture and Antiquities, Ministry of Energy and Petroleum, Ministry of Environment, Water and Natural Resources and the state agencies of National Museums of Kenya and Kenya Wildlife Service.

The terms of reference of the mission, its itinerary and programme and list of the people met can be found in the annexes.

2 NATIONAL POLICY FOR THE PRESERVATION AND MANAGEMENT OF THE WORLD HERITAGE PROPERTY

As highlighted in the March 2012 Reactive Monitoring Mission report to the Lake Turkana National Parks (Kenya), the property receives the highest level of legal protection under Kenyan legislation by the Kenya Wildlife Act as well as the Antiquities and Monument Act (currently the National Museums and Heritage Act of 2006). The 2012 mission noted that:

“The property is managed by Kenya Wildlife Service (KWS), with National Museums of Kenya (NMK) in charge of the management of the fossil sites. KWS, a government parastatal established by Wildlife Conservation and Management (Amendment) Act of 1989 owns the Turkana National Parks. SNP was established on 7 August 1973. Central Island was established on 26 January 1983. The South Island National Park was established on 26 January 1983. All above mentioned boundary plans pursue the principle of extension of the park boundaries 1 km from the topographic shoreline into the lake. This reading is also true for the boundaries of the World Heritage site.

The [2012] mission was informed that at the time of creation of SNP, an agreement was concluded with the local authorities to give certain user rights to the local communities, in particular access rights for the local inhabitants of the surrounding areas to graze and water stock “in case of difficulties” and for access rights to the County Council to the Lake shores to undertake “any sort of activity which may benefit the Council” [...]. The concern expressed by the World Heritage Committee

at the time of inscription on illegal grazing by large herds of domestic livestock in the property has to be read under the above mentioned agreement.

[...]

It is important to note that the northern tip of Lake Turkana and the Omo river delta which feeds into the lake as well as a large part of the Lake Turkana drainage basin is situated in Ethiopia.”

The current mission was informed that the States Parties of Kenya and Ethiopia signed a joint project with UNEP in April 2015, on sustainable development of the Turkana and its River Basins. The project, entitled, “Support to Sustainable Development in Lake Turkana and its River Basins”, has the objective of “...providing a science-based data and information that serves as a basis for sound policy and decision making and building their capacities and management of the ecosystems.”²

Also, both Kenya and Ethiopia are part of the Nile Basin Initiative (NBI), an intergovernmental organization dedicated to equitable and sustainable management and development of the shared water resources of the Nile Basin. While the Turkana basin is technically not part of the Nile Basin, the mission notes that the joint UNEP project agreement represents an appropriate tool when it comes to transboundary and multilateral issues related to water management of the Omo Basin.

²UNEP, Support to Sustainable Development in Lake Turkana and its River Basins, November 2013

3 IDENTIFICATION AND ASSESSMENT OF ISSUES / THREATS

3.1 Description of the Gibe III dam project

The Gibe III Hydro-Electric Project (HEP) is a flow-through hydropower scheme that has a design generation capacity of 1,870 MW. The project has 10 turbines each capable of producing 187 MW of power. The scheme consists of a 246 m high roller-compacted concrete (RCC) dam which could impound a maximum of 14.7 BCM of water. This would create a lake with a surface area of 206 km².

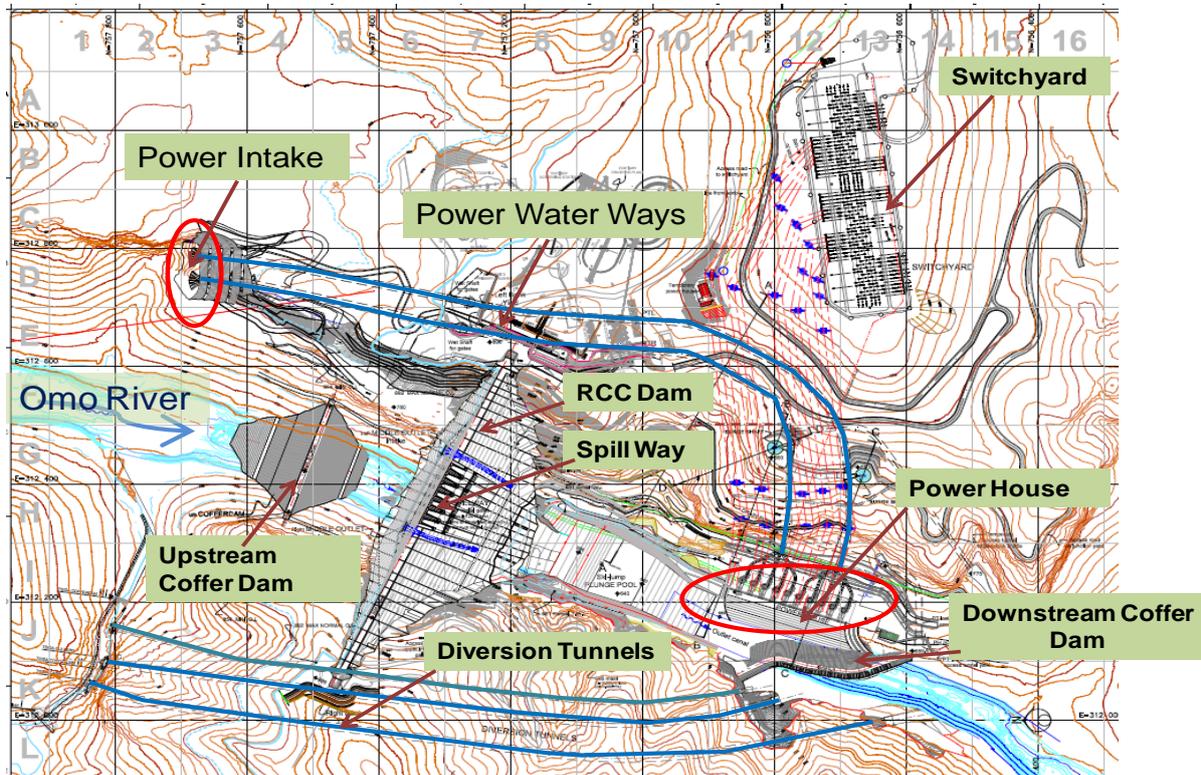


Figure 2. Illustrative plan of the Gibe III hydroelectric project, highlighting the key structures associated with the development. Source: Ethiopia Electric Power Corporation, April 2015.

The Gibe III HEP is the third scheme in the Gibe-Omo cascade and is located along the lower course of the Omo River, 155 km downstream of the Gilgel-Gibe II power plant.

At the time of the mission, 90% of the Gibe III project was completed. On 19 January 2015 impounding of the reservoir was started, which is expected to take three years. According to Ethiopian Electric Power (EEP) a constant flow of 60m³/s continues to be released downstream, which exceeds the minimum required flow of 25m³/s in the dry season. EEP has also asserted that there will be a continued environmental flow to be released downstream throughout the impounding process, including flood simulations during the rainy season.

A number of Environmental and Social Impact Assessments (ESIAs) have been completed for the Gibe III HEP. All of these assessments were prepared after the start of the works on the Gibe III Dam. Nonetheless they provide an insight into the impacts that the dam is expected to have. These are:³

- Environmental and Social Impact Assessment (CESI *et al.* 2009);
- ESIA Additional Study on Downstream Impact (Agriconsulting *et al.* 2009);

³This list is not exhaustive. There have been many reports, publications, blogs and news stories published on the project. This list refers to the most relevant documents.

- Public Consultation & Disclosure Plan (Salini Costruttori *et al.* 2009);
- Relocation Action Plan;
- Environmental and Social Management Plan;
- ESIA and RAP for Transmission Lines;
- Archaeological Impact Studies.

Additional Studies conducted by International Financing Institutions include:

- Economic, Financial, and Technical Assessment (EFTA);
- Hydrological studies (AfDB, University of Oxford);
- Review of existing ESIA studies;
- USAID –Impacts of the Dam on downstream areas.



An analysis of some of the most pertinent ESIA studies as they relate to the Gibe III HEP is presented in section 3.1.1.

To enable environmental flows even during periods of low water the design of the Gibe III HEP dam has been modified to include Middle Level Outlets with a discharge capacity of 1,500 m³/s.

As indicated above, impounding has started and will take three years. From the graph below (Figure 4) it can be seen that EEP aims to continue releasing environmental flows throughout the impounding period.

During the first year of impounding it is foreseen that 50% of the inflows are released downstream. During the second year of impounding it is foreseen that 80% of the inflows are released downstream.

3.1.1 Impact of Gibe III on river flows and water quality

One of the most common assertions related to the impact of the Gibe III HEP noted is that the dam will regulate river flow. The 2009 ESIA states that, "... benefits include a regulatory effect on the hydrologic balance of the Omo River system and Lake Turkana, a diminished impact of un-regulated catastrophic events (floods) on riverine human, animal, and floral communities and habitats, and the possibility to establish infrastructures and human activities, in particular settled agriculture, in many areas previously affected by unregulated floods of uncertain magnitude."⁴ This argument has also been voiced by EEP and other Ethiopian government authorities.

Whereas the above is certainly true (the dam will regulate river flows), the negative impacts on the riverine ecosystem and possibly Lake Turkana are downplayed. It is undeniable that the riverine ecosystem has lost its pristine status as a consequence of the cascade of dams that have been built over the past decades. Many reports describe the natural regime as destructive and not conducive to development, but it cannot be denied that the natural regime had its own values for fisheries and wildlife.

The Ethiopian government has made a political choice to develop its natural potential at the expense of environmental costs. The socio-economic benefits of the development were considered to be higher than the damage caused by destruction of habitats and ecosystems. It is not within the purview of this mission to comment on this choice. However it is noted that as a signatory to multiple environmental and heritage agreements and conscious of the importance of minimising environmental damages both in Ethiopia and in its neighbouring countries, Ethiopia has made serious efforts to mitigate the environmental damages of the Gibe III HEP.

In terms of the downstream impacts of the dam, EEP has integrated environmental flow recommendations in the management protocol for the dam. Both during impounding and during operation of the dam environmental flows will be released. These include flood flows during the rainy season (August to October). The levels of environmental flows are based upon calculations presented in the 2009 ESIA. In this 2009 ESIA report it is mentioned that, *"from the ecological point of view, the minimum flow in the normal dry season is the most relevant having little contribution from the tributaries downstream. The recorded natural minimum mean monthly flows is in the month of March (about 25 m³/s) and as a priority this value has been recommended as the absolute minimum monthly average compensation flow which must be sustained under (the) whole operation of the scheme. This flow preserves the natural regime during the dry season. However, with plant operation because the flow will be regulated there will be the added environmental benefit of reducing the incidence of extreme low monthly average flows which have been experienced in the past. During reservoir filling, it is also recommended to release a compensation flow of about 25m³/s."*

As indicated above, a regulated flow is not a natural flow and the minute oscillations and variations in flow inherent in a natural regime are beneficial to ecosystems and have important functions in natural cycles. Also in terms of water quality a regulated flow cannot presume to be able to mirror natural cycles in terms of nutrient and sediment flow and contents. The 2012 mission also indicates that, *"The regulation of the Omo river flow is therefore predicted to be detrimental to the ecology of the lake. Contrary to the lake level decrease linked to the dam filling, **the reduction of seasonal variations will be permanent** and lead to a permanent loss of wetland habitats particularly in the shallow northern part of the lake where SNP is situated."*⁵

⁴ CESI *et al.* (2009) Gibe III EIA – Additional Study on Downstream Impacts. Ethiopian Electric Power Corporation.

⁵ Mission report / Rapport de mission, Lake Turkana National Parks (Kenya) (N801bis)/ Parcs nationaux du Lac Turkana (Kenya) (N 801bis), 14-22 March 2012/14-22 mars 2012

In terms of water quality impacts the 2009 ESIA mentions that, “... *the impact of the submerged biomass, due to the low biomass/area ratio and to the rapid turnover time of the water in the reservoir, on the water quality of the reservoir can be considered non-significant*”.⁶ The actual impact on water quality will depend to a large extent on dam operation and retention times in the reservoir. As a consequence the mission is not able to comment on this issue at present.

3.1.2 Impact of Gibe III HEP on Lake Turkana

The mission considers that the impact of the Gibe III HEP and the impact of the irrigation schemes in the Lower Omo Basin on Lake Turkana require separate discussion. The mission does not overlook the fact that the Gibe III HEP improves the feasibility of the irrigation schemes in the Lower Omo Valley through regulation of flows. However in order to objectively analyse the impacts on Lake Turkana, these are considered separately, with a view that the cumulative impacts would need to be assessed thoroughly through the Strategic Environmental Assessment (SEA) that was requested by the World Heritage Committee in its Decision **36 COM 7B.3**.

At this stage it should be noted that shortly after its meeting with the Kenyan Delegation in Nairobi, the mission was provided with a technical review of the impact of Gibe III on Lake Turkana conducted and reported by the Ministry of Environment, Water and Natural Resources (MEWNR) of Kenya and communicated to the Ministry of Sports, Culture and the Arts (MOSCA) in its letter dated 16 May 2014. This report notes that with an evaporation rate equal to the annual inflow of the Omo River, Lake Turkana’s sustainability is entirely dependent on the Omo Basin, which accounts for almost 90% of its water inflow. In addition, fresh water inflows from the Omo River play an important role in the lake’s water quality, which tends to be increasingly saline. It is also noted that the lake’s littoral zones experience cycles of inundation and recession which depend on the flow variations that naturally occur in the Omo River through the year. In contrast, Kenya’s Kerio and Turkwel Basins contribute very little to lake water inflow, and it is stated that for that reason the existing Turkwel Dam has an insignificant impact on the lake’s water balance. The mission considers that MEWNR accurately assessed the risks for Lake Turkana related to the Gibe III dam.

The reduction of water level during impounding of the Gibe III reservoir has been estimated at a maximum of 1.5m by EEP, whereas in a 2012 study by Dr. Sean Avery⁷, the range has been estimated to be between 1.65m and 4m. EEP presented to the mission that “*this fluctuation is widely contained within the 5m of natural fluctuations recorded in the last 20 years*”⁸. Although the foreseen reduction is within the historical variations, the 2012 mission noted that this predicted change could impact the ecology of the lake, and requires further detailed hydrological analysis. A drop of 1.65 to 4 m has been predicted to cause the shoreline of the lake to recede by 2 to 3 km, which will be beyond the World Heritage property boundaries. Furthermore, as stated in the 2012 SOC report presented to the Committee at its 36th session, after filling is complete and if no water would be extracted from the Omo river downstream of the dam, normal river flow volumes would return to the lake. However, the 2012 mission noted that it could take 12 years for the lake to return to its equilibrium level, thus the overall impact on the lake’s water level from the filling may take 15 years in total.

In reports by experts that oppose the Gibe III HEP much speculative evidence is presented which is purported to indicate that levels may vary widely. Unfortunately these reports have interwoven the Gibe III HEP impacts with impacts of the Kuraz Sugar Scheme (on the basis of assumptions that have

⁶ CESI *et al.* (2009) Gibe III hydroelectric project ESIA, Ethiopian Electric Power Corporation.

⁷ Sean Avery (2012) Lake Turkana and the Lower Omo: Hydrological impacts of major dam and irrigation development. University of Oxford, African Studies Centre.

⁸ EEP presentation, April 2015

now been shown to be premature), and therefore offer little hard alternative evidence as to the impact of only the Gibe III HEP on Lake Turkana. The report by Dr. Sean Avery corroborates this by concluding that “*The filling of the Gibe III reservoir will cause a two-metre drop in Lake Turkana’s level. Thereafter, the dam alone will not alter the annual water volume..., except insofar as losses that occur within the Gibe III reservoir. Hence, as long as reservoir losses are minimal, once filled, Gibe III alone will not cause lake levels to fall.*”⁹

As also noted by the 2012 mission, it is recognised that the seasonal nature of inflows from the Omo River means that Lake Turkana water levels naturally rise and fall. However, the dam is predicted to permanently dampen the magnitude of this variation significantly from 1.2 m down to 0.8 m following dam construction. This will likely constitute a noticeable change to both the riparian and lake ecosystems and the Omo River delta and may have impacts on fish stocks and wildlife species which depend on the floodplains of the Omo River and the wetlands along the lake’s shore¹⁰, thereby posing a serious threat to the OUV of the property which justifies its inscription under criterion (x).

The mission notes that it will be important to monitor whether the environmental releases will be implemented during periods of drought during the operation of the dam, when water levels are low in the reservoir and environmental flows will have a definite economic price in terms of loss of generation capacity.

3.1.3 Environmental and Social Impact Assessments

The various ESIA’s conducted for the Gibe III HEP have identified a large number of impacts and mitigation measures. Selected examples of these identified measures, taken from the EEP presentations to the mission, are as follows:

Potential Environmental Impacts	Proposed Mitigation Measures
<ul style="list-style-type: none"> Flooding of sections of land along the Omo river (reservoir) 	<ul style="list-style-type: none"> Erection of permanent poles to mark the reservoir area
<ul style="list-style-type: none"> Land and property expropriation in the reservoir area 	<ul style="list-style-type: none"> Payment of full and fair compensation
<ul style="list-style-type: none"> Loss of 19,000 ha of natural vegetation 	<ul style="list-style-type: none"> Establishing an estimated 50,000 ha of buffer area development
<ul style="list-style-type: none"> Submergence of traditional river crossings 	<ul style="list-style-type: none"> Reinstate the river crossings by establishing boat service (12 Boats under procurement process)
<ul style="list-style-type: none"> Conflict between wild animals and human 	<ul style="list-style-type: none"> Training, awareness creation to the communities living adjacent to the Gibe III reservoir
<ul style="list-style-type: none"> Catchment erosion and reservoir sedimentation 	<ul style="list-style-type: none"> Reforestation and integrated watershed management
<ul style="list-style-type: none"> Reduction of flow to the downstream community 	<ul style="list-style-type: none"> Keep the recommended environmental flow
<ul style="list-style-type: none"> Reservoir water quality deterioration 	<ul style="list-style-type: none"> Removal of vegetation before reservoir impounding

⁹ It is important to note a caveat here. The UNESCO/IUCN mission was not a detailed hydrological study on the basis of primary data. It is a “quick-scan” reactive monitoring mission. Therefore the mission has made use of secondary data and reports reviewed and first-hand observations made during the mission. The findings, conclusions and recommendations have to be viewed in this context.

¹⁰ Mission report / Rapport de mission, Lake Turkana National Parks (Kenya) (N801bis)/ Parcs nationaux du Lac Turkana (Kenya) (N 801bis) 14-22 March 2012/14-22 mars 2012

The mission notes that the Gibe III HEP is a control structure that regulates the flow of the Omo River, hence after impounding, it cannot store floodwaters or significantly reduce the flow of the river over longer periods of time.

The report by MEWNR makes observations about the ESIA report on Gibe III, noting that it does not consider impacts beyond the Ethiopian border, that the hydrological data presented is not exhaustive on flow regime changes, and that it lacks an indepth analysis of the lake's water balance during and after the dam's construction. MEWNR also notes that key management structures, including to avoid degradation in the Omo-Turkana Basin, are lacking, and that the ESIA fails to identify measures to mitigate impacts from the filling of the reservoir. Cumulative impacts with downstream irrigation development and the proposed Gibe IV and V dams are also not assessed in the ESIA.

The mission supports the recommendation by MEWNR for the States Parties of Kenya and Ethiopia to develop and sign a transboundary water agreement, and to establish an independent Technical Monitoring Committee. The mission considers that the recently signed UNEP project to support sustainable development of the Lake Turkana and its river basins could be an ideal vehicle to support the implementation of these recommendations.

3.2 Description of the Kuraz Sugar Plantations

The Kuraz Sugar project site is located in the Southern Nations Nationalities and Peoples Regional state (SNNP). Geographically, the project area is located between, UTM 565 000 – 700 000 N and 131 500 – 196 500 E. The elevation ranges between 380 metres above sea level (m.a.s.l.) at the headwork site, and 485 m.a.s.l. at the downstream end of the command area. The current site consists of head works, a diversion weir, a main canal and a number of secondary canals that feed the sugar cane command areas. From the picture below (Figure 5) the overall layout as it is at present (April 2015) can be seen.

In the Ethiopian Growth and Transformation Plan (2010/11-2014/15)¹¹ it was foreseen that large areas of the Lower Omo Basin would be opened up for irrigated agriculture, with a strong focus on sugar cane. As a consequence the Kuraz Sugar Development Project was started by the Ethiopian Sugar Corporation in 2010. The gross irrigation command area was planned at 175,000 ha, of which 15% are earmarked for infrastructure and 20% for fallow irrigation. As a result the State Party of Ethiopia quoted the net irrigable area as 111,650 ha, of which only 6,000 ha is currently under sugar cane cultivation. The mission notes however, that 35% of the total 175,000 ha project area is 61,250 ha, hence it would result in 113,750 ha to be irrigated. Verification from the State Party on the exact figures is required.

¹¹ http://www.ethiopians.com/Ethiopia_GTP_2015.pdf

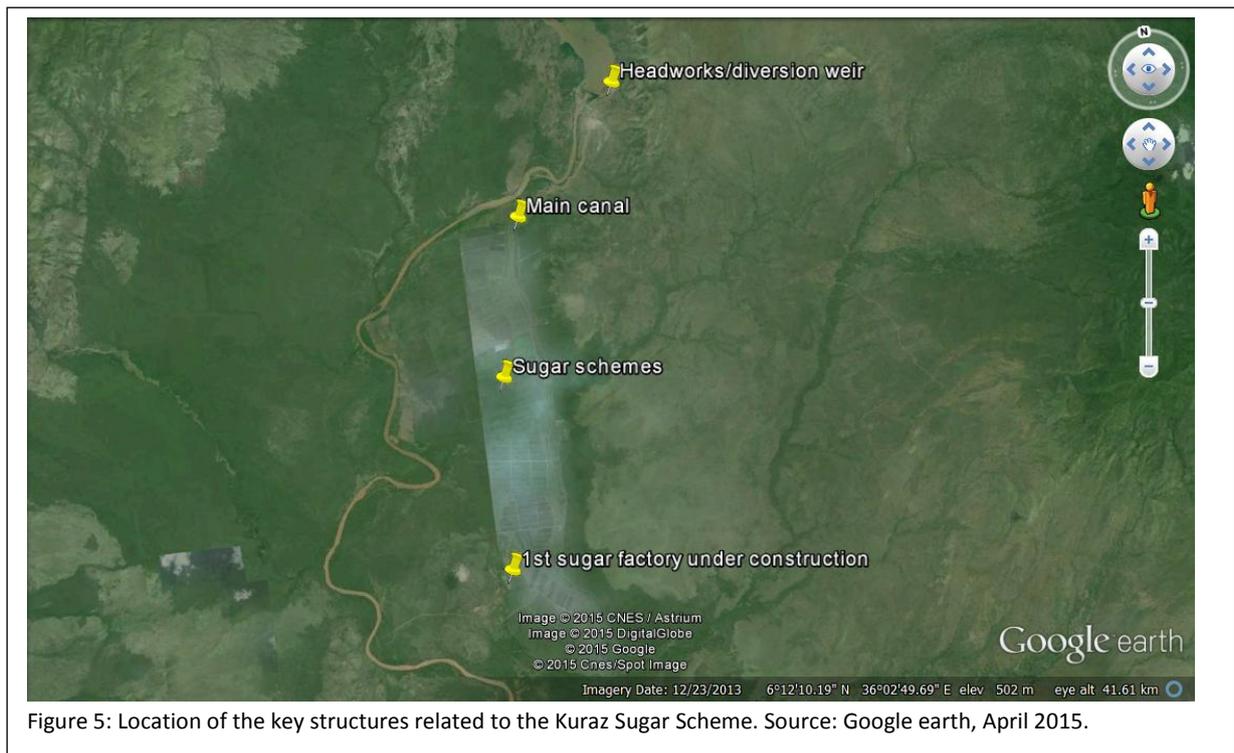


Figure 5: Location of the key structures related to the Kuraz Sugar Scheme. Source: Google earth, April 2015.

An environmental impact assessment of the Kuraz Sugar Scheme entitled, *“Environmental Issue of Kuraz Integrated Sugar Development Project”* was prepared by the State Party of Ethiopia in 2011. This EIA has listed a number of potentially detrimental issues associated with the scheme. Some of these are listed below:

- Generation of solid and liquid wastes;
- **Impact on water balance and downstream environmental releases;**
- **Changes in water quality;**
- Water logging and ground water table rise;
- Soil salinity;
- Creates eutrophication from release nutrients;
- Environmental degradations from increased pressure on the surrounding environmental resources;
- Loss of vegetation cover, impacts on wildlife, and biodiversity;
- Expansion of waterborne diseases, water related diseases, communicable and infectious diseases, malaria infestations, effects on water supply, sanitation and hygiene;
- Movement and access disruption and impact on livelihoods.

3.2.1 Impact of the Kuraz Sugar Scheme on water flows and water quality

The Kuraz Sugar Scheme and the associated plans for irrigated agriculture in the Lower Omo Basin are potentially very disruptive and damaging. Consumptive use of water, damage to soils due to monocultures, pollution of waters through the use of pesticides and fertilizers and the impact on wildlife and biodiversity in the adjacent national parks are all possible impacts that have to be considered.

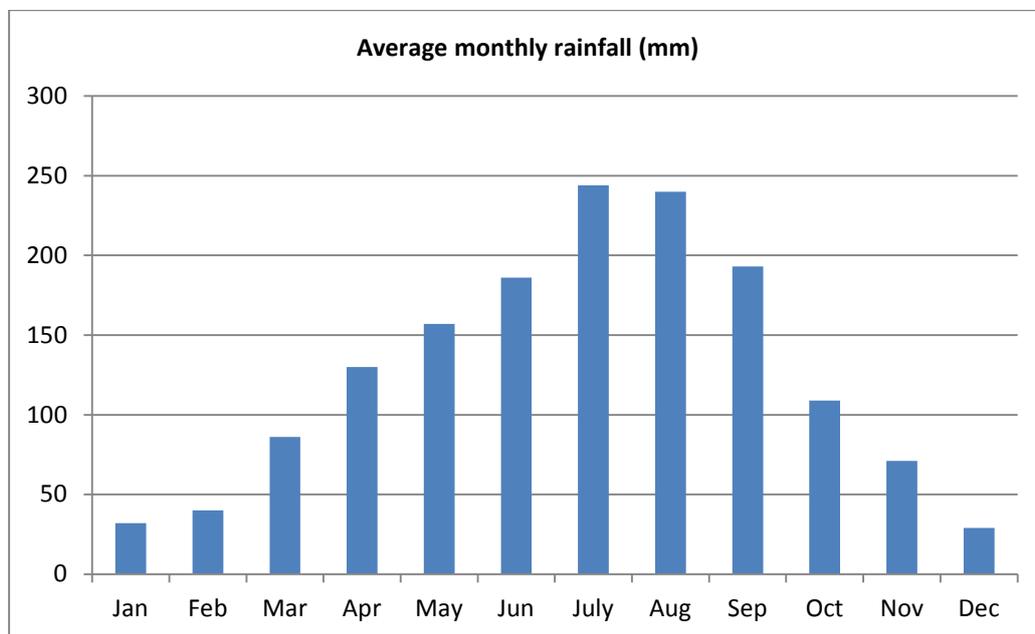
At present the scheme has only been developed up to a total of 6,000 ha, which is under irrigation. Progress in expanding the project has been slow due to wet topsoil and issues with drainage. The

mission therefore notes that the present use of waters from the Omo River currently has limited impact on the OUV of the property. Most of the water also flows back into the Omo through drainage systems.

The current and projected impacts of the Kuraz Sugar Scheme on the Omo River are considered to be less severe than originally projected. The main reasons for this provided by the Ethiopian Authorities and discussed with this mission are as follows:

- a) Only supplemental irrigation due to purported sufficient rainfall is required.¹² According to the Ethiopian Authorities rainfall data gathered over the past three years indicates that there is a much broader rainfall pattern in the area than previously assumed. Average rainfall data is presented in the table below. This would mean that the irrigation demand of the sugar cane would only be supplementary.

Graph 1. Average monthly rainfall for the period 2011-2014, as communicated to the mission by the Ethiopian Authorities.



- b) High water retention of the topsoil. The soils are characterised as Black Cotton Soils which have high water retention. This means that according to the authorities the sugar cane is only irrigated once a month.
- c) Only 111,650 ha to be developed out of the total of 175,000 ha (see also section 3.2 above).
- d) Return of drainage waters to Omo. None of the studies on the hydrology of the Omo Basin have taken serious consideration of the drainage water which flows back into the Omo River.
- e) Absence of use of fertilizers and chemicals (for now). Due to the high fertility of the soils no fertilizers or pesticides are being used.

The Ethiopian authorities also quoted a number of other mitigating aspects such as a purported reduction in evaporation due to the narrow and deep structure of the Gibe III HEP reservoir and

¹² The data available is only for 3 years and the vegetation seen does not seem to support the “sufficient rainfall” notion. Vegetation is typical of drylands that receive very little rainfall. The rainfall patterns in the project area need to be reviewed again after a few more years to be able to assess whether the rainfall patterns are really sufficient.

tributaries flowing into the Lower Omo after the intake of the Kuraz Sugar Scheme.¹³ These cannot however be verified by the mission at present, and will require monitoring over time.

On the basis of this information and the various studies conducted for the scheme, the State Party of Ethiopia informed the mission that according to its assessment, the irrigation scheme as currently foreseen and when fully developed, will lead to a projected water use of 4% to 6% (1.54 BCM) of the total flow of the Omo River¹⁴. This significant difference compared to previous estimations by independent experts of 28% to 40%¹⁵, can be attributed to the factors taken into account by the State Party of Ethiopia, such as the reduced physical net area for irrigation, higher average rainfall in the region than previously assumed and higher water retention in the topsoil as mentioned above.

3.2.2 Impact of the Kuraz Sugar Scheme on Lake Turkana

The exact impact on Lake Turkana is difficult to ascertain on the basis of the data that are available, beyond what previous expert reports, mission report and SOC reports have stated. These are presented in the above sections of this report. The mission recommends that a detailed EIA is conducted including a specific assessment of impacts from the Scheme and any other proposed development of irrigated agriculture in the Lower Omo Valley on the OUV of the property, using best available hydrological data of the Lower Omo, including its tributaries downstream of the Kuraz Sugar Scheme, and an accurate assessment of long-term rainfall data.

3.3 Positive or negative developments in the conservation of the property since the 2012 mission

As agreed in the Terms of Reference for the mission (Annex 6.2), the field mission was exclusive to Ethiopia and did not visit the Lake Turkana World Heritage property so observations on developments were limited to those in Ethiopia. However, in a separate visit on 15 and 16 May 2015, the mission met with a Kenyan Delegation in Nairobi. The Kenyan authorities met in Nairobi emphasised the need for joint hydrological studies in relation to the Kuraz Sugar development and continuous monitoring for the level of usage and water quality, and indicated that this had been agreed on by the two States Parties when they met in January 2015.

The mission observed that no significant development in terms of irrigation area for the Kuraz Sugar Scheme had been made since the 2012 mission. As a result less abstraction has taken place to date, compared to what was previously anticipated, though future impacts require further assessment. The mission was also informed by the Ethiopian authorities of their commitment to mitigate the impacts of planned development schemes, which were welcomed. Main mitigation measures proposed were joint Ethiopian/Kenyan monitoring schemes on water quality and quantity and a joint dialogue on measures to be taken in case water quality parameters exceed agreed standards or water abstractions/diversions exceeded the indicated expected values.

As for the Gibe III HEP, mid-level outlets were included in the design, which is a positive modification from the original plan to allow for regulated flow. Impounding of Gibe III reservoir started in January 2015, and have so far exceeded the recommended minimum flow of 25m³/s, with an average flow stabilising at 60 m³/s, as of April 2015.

¹³ The mission had no reason to doubt the data presented. However this will require rigorous monitoring over time to confirm.

¹⁴ Water Balance Issues of Kuraz Sugar Project, STUDIO GALLY INGEGNERIA (SGI), (no date on the report).

¹⁵ Sean Avery (2012) Lake Turkana and the Lower Omo: Hydrological impacts of major dam and irrigation development. University of Oxford, African Studies Centre.

Another positive development noted by the mission was the joint UNEP project to support sustainable development of the Lake Turkana and its river basins, which was signed by the States Parties of Kenya and Ethiopia in April 2015. The project aims to lay emphasis on monitoring and mitigation of environmental impacts. However, there was no evidence that the implementation of the project had started at the time of the mission.

3.4 Information on any specific threat or damage to or loss of Outstanding Universal Value, integrity and/or authenticity for which the property was inscribed

No Strategic Environment Impact Assessment (SEA) has been undertaken although the mission received documents signed by both Ethiopia and Kenya that the SEA would be undertaken and completed by December 2014. In the meeting with the Kenyan authorities, it was explained that there had been a delay in convening a technical level discussion, which was initiated in 2013 but only happened in 2014, followed by the Kenyan technical team visit to Ethiopia in January 2015. In the bilateral meeting report submitted to the World Heritage Centre by the State Party of Kenya on 1 February 2015, a timeline to finalise the SEA by December 2015 was agreed on, however, the mission saw no evidence of work on SEA underway or started as at April 2015.

In the absence of an SEA, the mission was not able to assess the cumulative impacts from all ongoing and proposed developments in the Turkana Basin, both in Kenya and Ethiopia, which must be considered to evaluate the potential impact on the OUV of the property. The State Party of Ethiopia did not confirm or deny the possibility of the proposed Gibe IV and V dams on the Omo River, and hence the mission considers that these constitute an ongoing threat to the property.

The mission considers that the United Nations Convention on Non-navigational Uses of International Water Courses would be an interesting and helpful framework within which these matters could be considered through bi-lateral cooperation or better still through the Intergovernmental Authority on Development (IGAD). It should however be noted that Ethiopia has not currently ratified this convention.

3.5 Management effectiveness

One of the mitigation measures proposed by the EEP for the Gibe III HEP is Integrated Watershed Management. This means that a more integrated and transboundary approach to water management in the Omo River Basin would be introduced. This would link water demand for energy and agriculture to other demands such as ecosystems and livelihoods. This is indeed a very important and relevant measure. What is however important is to ensure that this is done in a concerted manner. Apparently the Ministry of Agriculture of Ethiopia is responsible for this integrated approach. The mission was however not able to ascertain whether the Ministry has the capacity for this work. During meetings with the Ministry of Agriculture the focus was on the agricultural value chain. Integrated Watershed Management as a mitigating measure for the damage caused by the Gibe III HEP was not discussed.

As the report submitted to the World Heritage Centre on 1 February 2015 by the State Party of Kenya did not address the requests made by the Committee in its Decision **38 COM 7B.90** Paragraph 10, no detailed update is available on the implementation by the State Party of Kenya of the recommendations of the 2012 mission to the property. However, in the meeting with the State Party of Kenya in May 2015, a number of outstanding actions were identified. It is noted that other developments in and around Lake Turkana (e.g. oil exploration) have to be considered in an integrated manner to be able to assess how all of these impact Lake Turkana. The mission therefore reiterates the urgency for the States Parties of Kenya and Ethiopia to jointly undertake an SEA in order to assess the cumulative impacts on the OUV of the property.

4 ASSESSMENT OF THE STATE OF CONSERVATION OF THE PROPERTY

4.1 Outstanding Universal Value

The mission did not visit the property and can only rely on secondary sources for the review as to whether the attributes of OUV and the conditions of integrity are being maintained. The previous mission (2012) observed that: “while the conservation and management of the fossil sites can be further improved, the geology and fossil record, which justified its inscription under criterion (viii) are intact”. This mission believes this observation still holds as there are no reported significant disturbances affecting the geology and fossil record within or near the property since then. The mission therefore concludes that attributes of Outstanding Universal Value and conditions of integrity for which the property was inscribed on the World Heritage List under criterion (viii) are being maintained.

The mission considers that the Kuraz Sugar Scheme as currently developed has a limited impact on the OUV of the property at present, and that the predicted drop in Lake Turkana’s water level as a result of the Gibe III HEP project will be within the historical oscillations of the lake. However, the mission considers that there are key considerations to be taken, such as the time it will take for the lake to regain its natural equilibrium after the impounding of the Gibe III reservoir, the impacts of permanently dampened flow variations on the ecology of the lake, the full potential impact of the final irrigation area of the Kuraz Sugar Scheme, and any additional developments in the river basin. Although the mission welcomes the serious mitigation measures taken by the State Party of Ethiopia, it is of significant concern that the predicted 1.65 to 4 m drop in lake levels would lead to a 2-3 km retreat of the shorelines to beyond the boundary of the World Heritage property as reported by the 2012 mission, which would significantly affect the attributes of the OUV of the property that justify its inscription under criterion (x). The mission therefore concludes that a detailed EIA of the irrigation schemes in the Lower Omo and a joint Kenya/Ethiopia SEA of all ongoing and proposed developments in the Turkana Basin are urgently required.

The impact of poaching around the property requires further assessment by the State Party of Kenya in order to assess the overall impact and threats to the OUV of the property. The mission therefore concludes that wildlife baseline data are urgently required.

4.2 State of conservation of the property

The key aspects of follow up have been the bilateral talks between Governments of Kenya and Ethiopia, visit of the State Party of Kenya’s high level technical team to Ethiopia, and invitation of monitoring missions to both countries on separate occasions.

Bilateral talks between the States Parties of Kenya and Ethiopia on the utilisation of the resources of the Omo River basin was reported by the State Party of Kenya in its 2012 state of conservation report. Further discussion on the potential impact of the Gibe III dam and associated agricultural irrigation projects on the property were initiated in 2013 between the States Parties following the Committee’s request at its 37th session. High level meetings were held between the two States Parties in 2014 where it was agreed that technical documents held by Ethiopia would be shared with Kenya, a time plan was agreed on in respect to preparation of an SEA to be completed by December 2014. Work on the SEA could however not commence and at a January 2015 high level meeting the States Parties agreed on a new time plan, where a new deadline for the SEA was set for December 2015.

Although the States Parties of Kenya and Ethiopia appeared to have been slow in responding to Committee’s Decisions, this mission observed strong willingness for cooperation between the two States Parties. This is evidenced by the signing of the joint UNEP project agreement which among others will support environmental monitoring, and through their increased bilateral communication.

5 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The mission concludes that the Kuraz Sugar Scheme as currently developed has a limited impact on the OUV of the property at present, and that the predicted drop in Lake Turkana water level as a result of the Gibe III HEP project will be within the historical oscillations of the lake. However, there are key considerations to be taken, such as the time it will take for the lake to regain its natural equilibrium after the impounding of the Gibe III reservoir, the impacts of permanently dampened flow variations on the ecology of the lake, the full potential impact of the final irrigation area of the Kuraz Sugar Scheme, and any additional developments in the river basin on the OUV of the property. The increased bilateral discussions between the States Parties of Kenya and Ethiopia since 2011 are welcomed and the significant efforts made by the State Party of Ethiopia to mitigate environmental impacts of the Gibe III HEP are acknowledged, nevertheless, there is an urgent need for the two States Parties to jointly undertake an SEA of developments in the Lake Turkana basin, and for the State Party of Ethiopia to undertake a detailed EIA for the Kuraz Sugar Scheme including a specific assessment of impacts from the development of irrigated agriculture in the Lower Omo Valley on the OUV of the property, using best available hydrological data of the Lower Omo reviewed by both Ethiopia and Kenya, including its tributaries downstream of the Scheme, and an accurate assessment of long-term rainfall data, in order to assess and mitigate the potential, significant impacts on the OUV of the property that may arise.

The mission also notes with significant concern that no baseline data is available on wildlife species, whilst wildlife populations continue to be under pressure from over-grazing, overfishing and poaching. The mission emphasises the need for the State Party of Kenya to monitor the status of wildlife populations as recommended in the 2012 mission report.

Considering the ongoing and planned developments in the Omo and Lake Turkana basins, which are additional to the threats from poaching, overgrazing and overfishing in the property reported by the 2012 mission, there is predicted to be a noticeable negative impact on the hydrology and wildlife of the Lake Turkana National Parks World Heritage property. The mission therefore concludes that the criteria for potential danger to the OUV of the property as recognized under criterion (x) are met, in accordance with the Paragraph 180 b) (ii) of the *Operational Guidelines*.

Recommendations

Based on the above findings and conclusions, in order to mitigate the potential for permanent, irreversible damage to the OUV of the Lake Turkana World Heritage property the mission recommends:

1. The States Parties of Kenya and Ethiopia to urgently undertake a joint Strategic Environmental Assessment (SEA), to be conducted to the highest international standards, to assess the cumulative impacts of all developments impacting on the Lake Turkana basin as a matter of priority in consultation with an independent committee of experts from Ethiopia, Kenya and an independent technical organisation (such as UNEP), and submit the completed SEA to the World Heritage Centre for review by IUCN;
2. The State Party of Ethiopia to commit to address the temporary 2 m drop in Lake Turkana's water levels that is predicted to occur during the three year impounding period, in particular by slowing the filling of the reservoir;
3. The States Parties of Kenya and Ethiopia to monitor the water flow and water quality downstream of the Gibe III dam as well as impacts on the seasonal wetlands in the property to ensure sufficient environment flows are being released into Lake Turkana, and to allow for an

accurate assessment of the maximum allowable volume of water extraction for the Kuraz Sugar Scheme;

4. The State Party of Ethiopia to provide a written commitment to the World Heritage Committee to release sufficient environmental flows to maintain sufficient seasonal variation in river flows and water levels needed to sustain the wetlands and floodplains in the Lake Turkana World Heritage property, and to prevent the currently predicted retreat of the lake shore to beyond the boundary of the property;
5. The State Party of Ethiopia to delay the further development of the Kuraz Sugar Scheme until a detailed EIA has been undertaken, including a specific assessment of impacts from the Scheme and any other proposed development of irrigated agriculture in the Lower Omo Valley on the OUV of the property, using best available hydrological data for the Lower Omo Valley reviewed by both Ethiopia and Kenya, including its tributaries downstream of the Kuraz Sugar Scheme and an accurate assessment of long-term rainfall data;
6. The State Party of Kenya to implement all of the 2012 reactive monitoring mission recommendations and provide an update to the World Heritage Centre without delay;
7. The States Parties of Ethiopia and Kenya to develop a transboundary water use agreement and an independent Technical Monitoring Committee within the framework of the UNEP project, "Support to Sustainable Development in Lake Turkana and its River Basins" as suggested by Kenya's Ministry of the Environment, Water and Natural Resources in its "Technical Review on the Impact of Gibe II Dam on Lake Turkana World Heritage Site". This is recommended to be developed within the spirit of the UN Convention on Non-navigational Uses of International Water Courses.

Recommendation as to whether the level of threats to the property warrants the property being placed on or removed of the List of World Heritage in Danger

Considering the likely cumulative impacts from the Gibe III dam on Lake Turkana's water level and natural flow variations, the lack of a thorough assessment of potential impacts from the Kuraz Sugar Scheme, and the fact that both these developments are continuing prior to a comprehensive SEA having been undertaken, the property is in potential danger in accordance with Paragraph 180 of the *Operational Guidelines*, and thus meets the conditions for inscription on the List of World Heritage in Danger. However, under the present circumstances especially regarding the efforts by the State Party of Ethiopia to mitigate environmental impacts from Gibe III, the limited current impact from the Kuraz Sugar developments, the fact that developments on the Kenyan side are still in a planning stage, and the cooperation so far shown between Ethiopia and Kenya in terms of commitments to manage the Lake Turkana basin as a whole, the mission team does not at present recommend the inscription of the property on the List of World Heritage in Danger.

6 ANNEXES

6.1 Decision 38 COM 7B.90 on Lake Turkana National Parks

Lake Turkana National Parks (Kenya) (N 801bis)

The World Heritage Committee,

1. Having examined Document WHC-14/38.COM/7B.Add,
2. Recalling Decision **37 COM 7B.4** adopted at its 37th session (Phnom Penh, 2013),
3. Welcomes the initiation of bilateral discussions between the States Parties of Kenya and Ethiopia on the potential impact of the Gibe III dam and associated agricultural irrigation projects on the property, and the stated intention to carry out a Strategic Environmental Assessment (SEA) of the developments on the Omo River, the completion of which is expected in December 2014;
4. Notes with concern that construction of large scale irrigation schemes has continued, and that initial filling of the reservoir of the Gibe III dam is reported to start this year, i.e. prior to the expected completion of the SEA, and prior to the identification and implementation of appropriate mitigation measures;
5. Considers that the imminent completion of the Gibe III dam and initial filling of its reservoir, and the ongoing development of associated large-scale irrigation projects in the Omo River Valley could lead to an irreversible loss of the Outstanding Universal Value (OUV) of the property and represent a clear potential danger to the OUV of the property, in accordance with Paragraph 180 of the Operational Guidelines;
6. Welcomes the invitation by the State Party of Ethiopia for a joint World Heritage Centre/IUCN reactive monitoring mission to review the impacts of the Gibe III dam, other planned hydro-electric developments and associated large-scale irrigation projects in the Omo region on the OUV of the property;
7. Decides to re-examine this issue at its 39th session in 2015, **with a view to considering in the case of confirmation of the ascertained or potential danger to its Outstanding Universal Value, the possible inscription of the property on the List of World Heritage in Danger;**
8. Urges the State Party of Ethiopia not to start the filling of the dam and to halt the construction of the large scale irrigation projects before the SEA is completed and appropriate mitigation measures are identified to guarantee sufficient inflow of water to Lake Turkana and sufficient seasonal variations to preserve the OUV of the property;
9. Requests the States Parties of Kenya and Ethiopia, with the support of the World Heritage Centre and IUCN, to develop, a set of corrective measures, which should include actions and indicators to ensure that impacts to OUV from the filling of the dam and irrigation projects will be avoided, for examination by the Committee at its 39th session in 2015;
10. Recalls its request to the State Party of Kenya, in consultation with the State Party of Ethiopia, to submit to the World Heritage Centre, by **1 February 2015**, an updated report, including a 1-page executive summary, on the state of conservation of the property and on the implementation of the recommendations of the 2012 monitoring mission, as well as those contained in the report of

the joint World Heritage Centre/IUCN mission mentioned in paragraph 6 above, for examination by the World Heritage Committee at its 39th session in 2015.

6.2 Terms of reference of the mission

Joint World Heritage Centre / IUCN Reactive Monitoring Mission to Ethiopia concerning Lake Turkana National Parks (Kenya): 3 to 7 April 2015

At its 38th session, the World Heritage Committee welcomed the invitation by the State Party of Ethiopia for a joint World Heritage Centre / IUCN reactive monitoring mission to review the impacts of the Gibe III dam, other planned hydro-electric developments and associated large-scale irrigation projects in the Omo region on the Outstanding Universal Value (OUV) of Lake Turkana National Parks World Heritage property in Kenya (Decision **38 COM 7B.90**).

In particular, the mission should undertake the following:

1. Assess the likely impacts of the Gibe III dam on the water level of Lake Turkana and on the OUV of the property.
2. Assess progress achieved with the Strategic Environmental Assessment (SEA) of the Lake Turkana Basin, and review the mitigation measures identified to ensure the maintenance of the OUV of the property during the filling of the dam reservoir and during the operation of the dam;
3. Assess the status and likely impacts of large-scale irrigation projects in the Omo region on the OUV of the property, in particular the Kuraz Sugar Scheme;
4. Discuss any anticipated future projects related to dams and water management;
5. In line with paragraph 173 of the *Operational Guidelines*, assess any other relevant issues that may negatively impact on the OUV of the property, including its conditions of integrity and protection and management.

The State Party will facilitate necessary field visits to key locations. In order to enable preparation for the mission, the State Party is requested to provide the following items to the World Heritage Centre (copied to IUCN) as soon as possible and preferably no later than 1 month prior to the mission:

- a) The (draft) SEA of the Lake Turkana Basin assessing the cumulative impacts of all above-mentioned developments on the OUV of the property;
- b) All relevant planning documents for the Kuraz Sugar Scheme and other large-scale irrigation projects in the Omo region, clearly showing their planned location and detailing the expected volume of water to be diverted from the Omo River throughout the year;
- c) All relevant planning documents for any anticipated future projects related to dams and water management;
- d) Copies of Environmental Impact Assessments for all of the above-mentioned developments, in addition to the SEA;

The mission should hold consultations with the Ethiopian and Kenyan authorities at national, regional and municipal levels, in particular:

- the Ethiopian Electric Power Corporation;
- the Ethiopian Ministry of Agriculture and Rural Development;
- the Ministry of Foreign Affairs of Ethiopia;
- the Ethiopian Ministry of Water, Irrigation and Energy;
- the Ethiopian Institute of Agricultural Research and the relevant Regional Agricultural Research Institutes;

- the Ethiopian Sugar Corporation
- the Kenyan Ministry of Foreign Affairs;
- the Kenyan Ministry of Environment, Water and Natural Resource;
- the Kenyan Ministry of Agriculture, Livestock and Fisheries; and
- the site managers of Lake Turkana National Parks.

The State Party of Ethiopia will facilitate visits of the representatives of the Kenyan authorities to Ethiopia in order to ensure that the mission can hold these consultations. In addition, the mission should hold consultation with a range of relevant stakeholders, including i) researchers; ii) NGOs; iii) representatives of local communities; and iv) representatives of the lead companies of the above-mentioned developments.

Based on the results of the above-mentioned assessments and discussions with the States Parties representatives and stakeholders, the mission will develop recommendations to the Governments of Ethiopia and Kenya and the World Heritage Committee with the objective of providing guidance to the State Parties for actions to be taken to address identified threats to the property, and to improve the conservation of its Outstanding Universal Value. It should be noted that recommendations will be provided within the mission report (see below), and not during the mission implementation.

The mission will prepare a concise report on the findings and recommendations within six weeks following the site visit, following the World Heritage Centre reactive monitoring mission report format.

6.3 Itinerary and programme

Revised Programme of Work (3-7 April, 2015)

Date	Activities
2 APRIL 2015	
13:30	Arrival of Edmond Moukala, UNESCO World Heritage Centre representative Welcome by Mr. Yonas Desta, DG, ARCCH / Departure to Intercontinental Hotel
20 :25	Arrival of Moses Wafula Mapesa, IUCN expert Welcome by Mr. Yonas Desta, DG, ARCCH / Departure to Intercontinental Hotel
3 APRIL 2015	
11 :00-12 :30	Welcome meeting and discussion on the mission itinerary implementation at ARCCH
12 :00 - 13:00	Lunch hosted by ARCCH
13:30	Arrival of Ele-Jan Saaf, IUCN expert
14 :00 – 15 :00	Meeting at the Ministry of Culture and Tourism
15-17:00	Consultation, Ministry of Water, Irrigation and Energy (MoWIE)
19:00-21:00	Dinner
4 APRIL 2015	
08 :00 – 15 :00	Departure to Gibe III (chartered plane) Site Visit Gibe III and Consultation (project coordinators, local government & people) Lunch hosted by Engineer Azeb
15 :30 – 19 :00	Departure to Kuraz Sugar Plantation in the Lower Omo Valley (Chartered by Helicopter) Site visit to Kuraz Sugar Development project Night at the Site guest house
5 APRIL 2015	
	Site visit to Kuraz Sugar Development project in the Lower Omo Valley (continued) Consultation (project coordinators, local government & people) Lunch hosted by Project Manager Departure to Addis Ababa (Chartered by Helicopter)
6 APRIL 2015	
9:30-11:00	Meeting at the Ethiopian Sugar Corporation
11 :30-14 :00	Meeting at the Ministry of Water, Irrigation and Energy (MoWIE) Lunch hosted by MoWIE
14 :00-15 :30	Consultation, Ministry of Agriculture & Research Institutions
16 :30-17 :30	Consultation, CRDA Director
19 :00	Dinner Reception
7 APRIL 2015	
10:00-12:30	Consultation at the Ministry of Foreign Affairs
4 :30pm	Departure (Seen off by: Mr. Yonas Desta & Mr. Mulugeta Zewdie)

National Contacts : Mr. Zerubabel Getachew (MoFA) and Mr. Yonas Desta (AARCH)

6.4 List and delegations met with the mission

3 – 7 April 2015, Ethiopia

Contact Person (Interlocutors)

Ministry of Water, Irrigation and Energy

1. H.E. Mr.Alemayehu Tegenu, Minister
2. Mr. Teshome Atnfie, Director Transboundary Rivers

Ethiopian Electric Power

1. Engineer Azeb Asnake, Chief Executive Officer and Project Manager of Gibe III
2. Mr. Mebratu Lemma Gibe III Site Coordinator
3. Mr.Eugino Zoppis, Salini Construction, Project Manager Gibe III

Ethiopian Authority for Research and Conservation of Cultural Heritage (ARCCH)

1. Mr.Yonas Desta, Director General
2. Ms. Tsehay Eshete, Director World Heritage Affairs

Sugar Corporation

1. Mr. Shiferaw Jarso, Director General, Ethiopian Sugar Corporation
2. Mr.Kiros Desta – DDG
3. Mr. Damena Daruta, Public Participation Affairs, Deputy Director General

Ministry of Agriculture

1. H.E. Mr.Tefera Deribew

Research Institutions

1. Dr.Yakob Arsano (AAU)
2. Dr. Nigussie Dana (South Agricultural Research Institute Director)
3. Mr.Asrat Terano (SARL)
4. Dr. Fantahun, Ethiopian Agricultural Research Institute, Director

NGOs

1. Dr. Meshesha Shewakena, CRDA (Marbella organization) Director

Regional Government

1. Mr. Dessie Dalke, President, Southern Peoples, Nations and Nationalities Region
2. Mr. Moloka, Administrator, South-Omo Zone

Ministry of Foreign Affairs

1. H.E. Ambassador Berhane Geber-Chirstos, State Minister
2. Mr. Mulugeta Zewdie, Head, Office of the State Minister

14 – 16 May, Kenya

National Museums of Kenya

1. Hoseah Wanderi

2. Emmanuel K. Ndiema

Kenya Wildlife Service

1. James G. Njogu

Ministry of Energy and Petroleum

1. Eng. L.G Thuku

Ministry of Sports Culture and Arts

1. Monicah Sairo

Ministry of Environment, Water and Natural resources

1. Hilda Njoroge – Fisheries
2. Gladys Wekesa - Water

6.5 Photographs



Picture 1: The mission team with representatives from Ethiopia. Photo © IUCN/Ele Jan Saaf



Picture 2: Gibe III Reservoir. Photo © IUCN/Ele Jan Saaf



Picture 4: Gibe III Reservoir. Photo © IUCN/Ele Jan Saaf



Picture 3: Gibe III dam. Photo © IUCN/Ele Jan Saaf



Picture 5: Omo River. Photo © IUCN/Ele Jan Saaf



Picture 6: Gibe III dam. Photo © Edmond Moukala



Picture 7: Sugar factory, Kuraz Sugar Scheme. Photo © Edmond Moukala

6.6 Bibliography

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